Claims

1. A method of producing 5-formyl-2-furylboronie acid, comprising:

a) adding a base to a composition comprising a boric acid ester and 2-furaldehyde, thereby obtaining a reaction mixture and protecting the formyl group of said 2-furaldehyde with a protective group,

b) working-up of said reaction mixture in an acidic medium, and

c) isolating 5-formyl-2-furylboronic acid.

2. The method according to claim 1, wherein said boric acid ester is an alkyl boric acid ester, aryl boric acid ester or a mixture thereof.

3. The method according to claim 2, wherein said alkyl boric acid ester is selected from the group consisting of $B(OiPr)_3$, $B(OEt)_3$, $B(OMe)_3$, $B(OPr)_3$, $B(OBu)_3$, and mixtures thereof.

4. The method according to claim 1, wherein said protective group is a O,O-acetal protective group or N,O-acetal protective group.

5. The method according to claim 4, wherein said acetal protective group is selected from the group consisting of alkanols having 1 to 10 carbon atoms, alkandiols having 1 to 20 carbon atoms, and mixtures thereof.

6. The method according to claim 1, wherein said base is selected from the group consisting of alkyl metal, metal amides, and mixtures thereof.

7. The method according to claim 1, wherein said base is selected from the group consisiting of lithium hexamethyldisilazane, sodium hexamethyldisilazane, potassium hexamethyldisilazane, lithium diisopropylamide, butyl lithium, methyl lithium, ethyl lithium, propyl lithium, and mixtures thereof.

8. The method according to claim 1, wherein a solvent is present in step a).

9. The method according to claim 8, wherein said solvent is selected from the group consisting of tetrahydrofuran, 1,2-dimethoxyethane, 1,4-dioxane, and mixtures thereof.

10. The method according to claim 1, wherein said working-up is conducted by using an aqueous acid.

11. The method according to claim 10, wherein sais aqueous acid is selected from the group consisting of hydrochloric acid, sulfuric acid, citric acid, acetic acid, formic acid, and mixtures thereof.

12. The method according to claim 10, wherein said isolating of 5-formyl-furan-boronic acid is carried out by filtration, centrifugation, crystallization or combinations thereof.

13. The method according to claim 1, further comprising recrystallizing 5-formyl-furan-boronic acid, thereby purifying said 5-formyl-furan-boronic acid.

14. The method according to claim 1, comprising:

a) adding lithium diisopropylamide to a composition comprising triisopropylborate and furfuraldiethylacetal, and optionally a solvent, thereby obtaining said reaction mixture, and

b) working-up of said reaction mixture in an acidic medium, and

c) isolating 5-formyl-2-furylboronic acid.

15. The method according to claim 1, wherein said protective group is selected from the group consisting of methanol, ethanol, propanol, butanol, ethylene glycol, 1,3-propane diol, and N-substituted ethanol amines.

16. The method according to claim 6, wherein said alkyl metal is alkyl lithium, alkyl sodium or alkyl potassium.

17. The method according to claim 1, wherein said adding proceeds at a temperature of from -100°C to 30°C.

18. The method according to claim 1, wherein a ratio of said base to the protected 2-furaldehyde in step a) is from 1,0 to 1,6 equivalents of base per mole protected 2-furaldehyde.

19. The method according to claim 1, wherein a ratio of the boric acid ester to the protected 2-furaldehyde is from 1,0 to 1,8 moles of boric acid ester per mole of protected 2-furaldehyde.

20. The method according to claim 1, wherein said working-up is carried out at a temperature of from -10°C to 70°C.